

## THE MINERAL INDUSTRY OF

# AUSTRIA

By Harold R. Newman

Although the mining industry has had a long tradition in Austria, the metal mining sector continued to decline in 1997, principally due to high operating costs, low ore grades, environmental problems, and increased competition. This was not the case with the industrial minerals sector, which has been producing a number of important minerals. Austria has been considered a significant world producer of graphite, magnesite and talc. Recycling activities were also increasing. (See table 1.) On January 1, 1995, Austria, along with Finland and Sweden, acceded to the European Union (EU). This entry extended and reinforced the EU's mineral industry. In Austria, graphite, iron ore, magnesite, talc, and tungsten were the main mineral products. Dependent on foreign trade, Austria has had an open economy closely linked to the economies of other EU member countries, especially Germany.

In the last several years, the Austrian mineral industry has turned away from coal and base-metal mining toward the industrial minerals sector. Most of the growth in the mineral resources area has been in the production of industrial minerals for which operations have been developed by the private sector.

All the metal mines, except for the iron ore operation at Erzberg, and the tungsten operation at Mittersill, were closed. The Mittersill Mine was reopened in 1995 after being closed for 2 years for economic reasons. Mittersill, together with two graphite mines and a mica operation, represented the underground mining sector. A small portion of the mineral industry was still under Government control. (See table 2.)

All the aluminum produced in Austria in 1997 was secondary. The Ranshofen smelter, with a capacity of 50,000 metric tons per year (t/yr), was the larger of two secondary smelters. The Government-owned facility was scheduled to be privatized by 1998. The operation consisted of a smelter and casthouse, a rolling mill, a press mill, and an automobile wheel plant. Scrap was obtained from private collecting organizations.

At the smaller Lend smelter, indigenous scrap was augmented with imported ingots, depending on the particular requirements of the finished products. The facility consisted of a 15,000-t/yr smelter, two casthouses, a crucible furnace, three oil-fired furnaces, and a closed furnace. Fuel and compressed air tanks were the main products.

The secondary copper smelter at Brixlegg relied on copper and copper alloy scrap from domestic sources, as well as scrap imports from Germany and Italy.

The Erzberg Mine produced a beneficiated iron ore that was shipped by rail to the nearby Donawitz and Linz steel mills of Voest-Alpine Stahl AG for the production of self-fluxing sinter averaging 50% iron and 3% manganese.

Voest-Alpine Stahl AG reported that the period from April 1997 to September 1997 saw the completion and startup phases of a range of major investments from the special 1996-1998 investment program, particularly at the Linz plant. This included startup of a new CC5 continuous caster and raising the capacity of the Hot Dip Coating Plant No. 2 from 240,000 to 280,000 metric tons. Startup of the 600,000-t/yr continuous annealing facility was expected in the 1st quarter of 1998. At the Donawitz plant the new oxygen plant became operational in 1997 (Voest-Alpine Stahl AG, 1997, Investments—important startup steps completed, accessed May 28, 1998, at URL [http://www.voest.co.at/latest/halbjahr/investi/htm/invest\\_t.htm](http://www.voest.co.at/latest/halbjahr/investi/htm/invest_t.htm)).

The Donawitz steel plant was equipped with three blast furnaces (2 million ton-per-year (Mt/yr) total capacity) three basic oxygen converters (1.2 Mt/yr total capacity) and two continuous casting machines. The Linz steel plant had five blast furnaces (2.99-Mt/yr total capacity), three basic oxygen converters (3.35-Mt/yr total capacity), two continuous casting machines, and several rolling mills.

Voest-Alpine was planning to replace the old existing Donawitz steel plant with a clearly structured compact mill in line with state-of-the-art technology. A wider product range could be offered by using fewer aggregates, thus making operations more compact and adaptable. Moreover, material flow would be optimized with regard to logistics and energy consumption. Production capacity would remain unchanged (Voest-Alpine Stahl AG, 1998, Compact steel mill for Donawitz gets the go-ahead, accessed May 28, 1998, at URL <http://www.voest.co.at/latest/konznews/htm/pm27398s.htm>).

Ample supplies of calcite, dolomite, and limestone were available to support a viable cement industry. Perlmooser Zementwerke AG (PZ), with four plants, was the largest company in 1997. PZ's largest plant, at Mannesdorf near Vienna, had a 1.4-Mt/yr capacity, accounting for about 65% per year of the a domestic cement production.

Austria was one of the world's largest sources of high-grade graphite. Grafitbergbau Kaiserberg AG operated open pit mines at Kaiserberg and at Trieben. Grafitbergbau's 30,000-t/yr capacity processing plant at Kaiserberg consisted of drying, classification, milling, flotation, and fine grinding sections. The other company involved in graphite production was Industrie und Bergbaugesellschaft, Pryssock & Co. KG, which operated the Trandorf open pit mine at Mühldorf.

Veitsch-Radex AG (VRAG) was the largest producer of magnesite in Austria. Three of its five mines were active in 1997. With an output of about 400,000 t/yr, Breitenau was VRAG's largest operation. Radentheim, the smallest with an

output of 80,000 t/yr, produced a high iron magnesite. VRAG's dead burned magnesia capacity was very large, exceeding 400,000 t/yr. The iron and steel industry was the largest consumer of VRAG's products (AEIOU, November 27, 1996, Veitsch-Radex AG, accessed July 14, 1998, at URL <http://www.aeiou.at/aeiou.encyclo.v/v093189.htm>).

Austrian salt mines were owned by the Government and regulated by the Ministry of Finance. All salt output was from three underground mines and one brine well in central Austria. The Government was proceeding with plans to privatize the operations.

Luzenac Naintsch, the only producer of talc in Austria, operated three mines in the Styria region and produced a range of talc, chlorotic talc, dolomite talc, and chlorite-mica-quartz ores. The Rabenwald open-pit mine was the largest, with a capacity of about 100,000 t/yr of talc and chlorotic talc. The Lassing underground mine had a capacity of 30,000 t/yr, producing a dolomite-talc product with a high degree of whiteness. The Weisskirchen underground mine had a capacity of 30,000 t/yr and produced an ore containing chlorite, muscovite mica, and quartz (Naintsch Mineralwerke GmbH, 1997, [Untitled] accessed July 14, 1998, at URL <http://www.techplace.at/info/11067.htm>).

In the coal mining sector, the open pit Oberdorf Mine of Graz-Koflacher Eisenbahn und Bergbaugesellschaft GmbH was the only lignite mine with any significant production in 1997. The

production of about 1 million metric tons was used by a local Ampflwang Mine, was negligible. Additional coal for other thermal power stations was imported from Australia and Poland.

Because Austria is a landlocked country, all transportation is on railroads and highways. The total length of railroad consisted of 5,624 kilometers (km) of standard-gauge and 355 km of narrow-gauge tracks. About 98% of the railroad was Government-owned, and more than 50% was electrified. The length of roads totaled 110,000 km, of which 35,000 km were primary highways, including 1,554 km of autobahn, the rest were mostly gravel and earth. The main navigable river was the Danube, with major ports in Linz and Vienna.

Because of Austria's long history of minerals exploration and mining tradition, geologic conditions are fairly well known. Future mining activities will most likely be concentrated in industrial minerals, mainly for domestic consumption. The chances of finding new and workable base metal deposits are probably remote.

### **Major Source of Information**

Bundesministerium für Wirtschaftliche Angelegenheiten  
Lansatrasse Hauptstrasse 55-57  
1031 Vienna, Austria

TABLE 1  
AUSTRIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/
<b>METALS</b>					
Aluminum metal, secondary	43,300	52,500	46,800	51,400 r/	52,000
Copper:					
Smelter, secondary	46,856	49,562	53,400 e/	69,000 r/	66,000
Refined:					
Primary	5,871	2,904	530	1,000 e/	2,000
Secondary	46,856	49,562	53,000	57,000 e/	74,000
Total	52,727	52,466	53,530	58,000 e/	76,000
Gold, metal kilograms	315	382	100 e/	100 e/	100
Iron and steel:					
Iron ore and concentrate:					
Gross weight thousand tons	1,427	1,653	2,116	1,853	1,800
Fe content do.	448	390	709	504	500
Metal:					
Pig iron do.	3,070	3,362	3,838	3,416	3,965 2/
Ferroalloys, electric-furnace e/ do.	12	12	12 r/	11 r/	11
Crude steel do.	4,149	4,405	4,537	4,442	5,196 2/
Semimanufactures do.	3,450	3,500	3,968	3,560 r/	4,078 2/
Lead:					
Mine output, Pb content of concentrate	1,340 r/	--	--	--	--
Metal:					
Smelter:					
Primary e/	2,000	--	--	--	--
Secondary	18,800	15,833	21,919 r/	22,000 r/ e/	22,000
Total	20,800	15,833	21,919 r/	22,000 r/ e/	22,000
Refined:					
Primary	4,779	418	--	--	
Secondary	17,857	17,165	21,919	22,900 r/	22,700
Total	22,636	17,583	21,919	22,900 r/	22,700
Manganese, Mn content of domestic iron ore	26,890	31,288	42,463	26,000 e/	25,000
Silver, metal	--	24	--	--	
Tungsten, mine output, W content of concentrate	105 r/	--	738 r/	1,413 r/	1,400
Zinc:					
Mine output, Zn content of concentrate	20,014 e/	--	--	--	--
Metal, primary, refined	6,838	--	--	--	--
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic thousand tons	4,941	4,828	3,843	3,873 r/	3,852 2/
Clays:					
Illite do.	300	267	277	151	150
Kaolin:					
Crude do.	342	469	427	180 r/	180
Marketable do.	64	65	57 r/	60 r/	60
Other do.	2,990	2,981	2,900 e/	3,000	2,800
Feldspar, crude	8,492	4,883	--	--	--
Graphite, crude	4,146	12,324	12,019	12,000 r/	12,000
Gypsum and anhydrite, crude thousand tons	876	1,070	958 r/	996	1,000
Lime do.	1,811 r/	1,850 r/	1,908 r/	1,990 r/	2,000
Magnesite:					
Crude do.	649	681	784	624	700
Sintered or dead-burned do.	323	297	272	289	300
Caustic calcined do.	50	76	59	52	60
Nitrogen, N content of ammonia e/	400	400	400	400	400
Pigments, mineral, micaceous iron oxide e/	8,400 2/	8,000	8,000	7,500	7,500
Pumice (trass)	9,102	5,670	6,000 e/	6,000	5,000
Salt:					
Rock thousand tons	1	1	1	1	1
In brine do.	695	701	523	367 r/	400

See footnotes at end of table

TABLE 1--Continued  
AUSTRIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/
<b>INDUSTRIAL MINERALS--Continued</b>					
Sand and gravel:					
Quartz sand thousand tons	4,300	6,457	7,503	6,012	6,000
Other sand and gravel do.	16,942	19,067	16,048	16,000	18,000
Total do.	21,242	25,524	23,551	22,012	24,000
Sodium compounds, n.e.s.: e/					
Soda ash, manufactured do.	150	150	200	200	200
Sulfate, manufactured do.	120	120	100	100	100
Stone: 3/					
Dolomite do.	7,770	8,159	8,790	9,155	9,000
Quartz and quartzite do.	429	416	395	317 r/	282 2/
Other:					
Limestone and marble do.	19,600	19,993	19,080	20,000	20,000
Basalt do.	3,360	4,092	4,202	698 r/	647 2/
Marl do.	2,840	2,306	1,931	2,000	2,000
Crushed stone do.	11,500	11,937	11,299	12,000	12,000
Total do.	45,499	46,903	45,697	44,170 r/	43,929
Sulfur, byproduct:					
Of metallurgy e/	9,296 2/	6,500	1,500	--	--
Of petroleum and natural gas	7,656 2/	9,266	9,000 e/	10,000 e/	9,000
Total	16,952 2/	15,766	10,500	10,000	9,000
Talc and soapstone, crude	136,640	130,602	131,614	130,000	155,730 2/
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, brown and lignite thousand tons	1,691	1,368	1,282	1,110	1,100
Coke do.	1,400	1,328	1,330	1,350 e/	1,300
Gas, natural:					
Gross million cubic meters	1,488	1,489	1,480	1,400 e/	1,400
Marketed e/ do.	1,100	1,000	1,000	1,000 e/	100
Oil shale	195	1,146	1,078	498	500
Petroleum:					
Crude thousand 42-gallon barre	8,060	7,671	7,213	7,121 r/	7,200
Refinery products:					
Liquefied petroleum gas do.	6,760	4,292	6,960	7,000	7,000
Gasoline do.	19,000 e/	21,598	17,680	19,541 r/	20,120 2/
Kerosene and jet fuel do.	3,140	2,929	3,309	3,823 r/	3,960 2/
Distillate fuel oil do.	12,800	9,064	8,736	9,000	9,000
Lubricants do.	8,670	280 e/	--	--	--
Residual fuel oil e/ do.	11,000	11,000	11,000	9,510 2/	9,623 2/
Bitumen e/ do.	1,660 2/	1,500	1,500	1,500	1,600
Unspecified do.	739	628	630	600	600
Refinery fuel and losses do.	2,240	2,102	2,310	2,200	2,000
Total e/ do.	66,009	53,393	52,125	53,174 r/	53,903

e/ Estimated. r/ Revised.

1/ Table includes data available through May 1998.

2/ Reported figure.

3/ Excluding stone used by the cement and iron and steel industries.

TABLE 2  
AUSTRIA: STRUCTURE OF THE MINERAL INDUSTRY IN 1997

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum	Salzburger Aluminum GmbH	Smelter at Lend	15
Do	Austria Metall AG (Government, 100%)	Smelter at Ranshofen	50
Cement	Perlmooser Zementwerke AG	Plants at Kirchblich, Mannesdorf, Retsnei, and Rodaun	3,000
Do	Gebr Leube Portlandzementwerke	Plant at Gartenau	700
Do	Zemenwerke Eiberg	Plant at Eiberg	600
Do	Wietersdorfer Zemenwerke	Plant at Wietersdorf	600
Coal	Graz-Koflacher Eisenbahn und Bergbaugesellschaft GmbH (Government, 100%)	Oberdorf Mine	1,200
Copper	Austria Metall AG (Metal Mining Corp. of Canada, 41%, Mount Isa Mines of Australia, 41%, and Government, 18%)	Plant at Brixlegg	75
Graphite	Industrie und Bergbaugesellschaft Pryssok & Co KG	Trandorf Mine at Mühlendorf	15
Do	Grafitbergbau Kaiserberg AG	Kaisersberg Mine	3
Do	Grafitbergbau Trieben GmbH	Trieben Mine	3
Gypsum	Erste Salzburger Gipswerk-Gesellschaft Christian Moldan AG	Abtenau and Moosegg Mines	300
Do	Rigips Austria GmbH	Grundlsee, Puchberg, Unterkainisch, and Weisenbach Mines	250
Do	Knauf Gesellschaft GmbH	Hinterstein Mine	160
Iron ore	Voest-Alpine Erzberg GmbH (Government, 100%)	Erzberg Mine at Eisenerz	2,000
Lead	Bleiberg Bergwerks-Union AG (Metall Gesellschaft, 74%)	Smelter at Brixlegg	55
Magnesite	Veitsch - Radex AG	Mines at Breitenau, Hochfilzen and Radenthein	600
Do	Radex Austria AG (Osterreichische Magnesit AG, 100%)	Millstatteralpe Mine	250
Natural gas			
million cubic meters	Osterreichische Mineralolverwaltung AG (Government, 100%)	Fields in Vienna Basin	1,500
Steel	Voest-Alpine Stahl AG (Government, 100%)	Plants at Donawitz and Linz	4500
Talc	Luzenac Naintsch AG	Mines at Lassing, Rabenwald, and Weisskirchen Plants at Oberfeistitz and Weisskirchen	160
Tungsten	Wolfram Bergbau und Hütten GmbH	Mittersill Mine, Salzburg; conversion plant, Bergla	350